

REMARKS

Claims 1-21 are all the claims pending in this application. Claims 6 and 17 have been amended for purposes of clarity, and new claims 20-22 have been added. New claims 20-21 correspond to claims 6 and 7 and depend from claim 1. New claims 22-24 depend on independent claims 1, 6 and 17 and recite "consisting of" language.

Entry of the above amendments is respectfully requested.

I. Response to rejection of claims 1, 6, 14 and 17-19 under 35 U.S.C. § 112, first paragraph

On pages 2-3 of the Office Action, the Examiner rejects claims 1, 6, 14 and 17-19 under 35 U.S.C. § 112, first paragraph.

Applicants respond as follows.

First, the Examiner asserts that the specification, while being enabling for the metal salt being strontium chloride 6 hydrate, does not reasonably provide enablement for "a metal salt comprising at least one of Ca, Sr, Ba, Pb, or Mg".

Applicants respectfully submit that the present specification does enable one of skill in the art to make and/or use the present invention. As long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement is satisfied. *See* MPEP 2164.01(b).

In this application, a method of making and using the present invention is disclosed, and in particular, the present specification contains Examples that use

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/579,708

barium chloride and strontium chloride. In addition, undue experimentation is not necessary since there are Examples set forth in the specification and salts containing Ca, Sr, Ba, Pb and Mg, such as nitrates, acetates and chlorides are disclosed as being usable at page 14, lines 6-17.

Second, the Examiner asserts that claims 1, 6, 14, and 17-19 contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Applicants submit that the claims contain subject matter which was described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors had possession of the claimed invention. As Applicants noted in the CPA transmittal, an example can provide support for an endpoint of an amended range (*see, e.g.*, MPEP §2163.05III. and *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976), in which a disclosed range of 25-60% and specific examples of 36% and 50% supported the amended range 35%-60%).

The present application discloses ranges of about 10 to about 200 m²/g and about 10 to about 100 nm, and Example 4 in the present application discloses a specific surface area of 28 m²/g and a specific surface area diameter D₁ of 0.05 μm (50 nm) and all the other invention Examples in the present application disclose specific surface areas and specific surface area diameters D₁ within the scope of the amended claims. Therefore, the disclosure in the present application supports the amended claims.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/579,708

In view of the above, Applicants respectfully request that the rejections be withdrawn.

II. Response to rejection of claims 6, 17 and 19 under 35 U.S.C. § 112, second paragraph

On page 3 of the Office Action, the Examiner rejects claims 6, 17 and 19 under 35 U. S. C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

The Examiner will note that Applicants have amended claims 6 and 17, as suggested by the Examiner. Accordingly, withdrawal of the foregoing rejection is respectfully requested.

III. Response to rejection of claims 1, 6, 14 and 17-19 under 35 U.S.C. § 103(a)

On pages 3-4 of the Office Action, the Examiner rejects claims 1, 6, 14, and 17-19 under 35 U.S.C. 103(a) as being unpatentable over JP 6-305729 (JP '729), JP 11-228139 (JP '139), JP 7-069635 (JP '635), JP 5-178617 (JP '617), JP 6-316414 (JP '414) or JP 8-119745 (JP '745).

Applicants respond as follows.

Initially, with respect to JP '139, Applicants submit that the present claims are supported by the provisional application for the reasons set forth in Section I above. Therefore, Applicants submit that JP '139 should be removed as a reference.

In addition, JP '139 discloses a particle size and surface area are for titania particle that are used as a raw material. JP '139 does not disclose any primary particle

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/579,708

size, secondary particle size or surface area of a perovskite titanium-containing composite oxide particle. Further, JP '139 is silent with respect to both crystalline form and production of titania. Accordingly, JP '139 does not teach or suggest a brookite crystalline form or producing titania by subjecting a titanium salt to hydrolysis.

With respect to JP '729 and JP '635, the Examiner asserts that SO_3 is not excluded because the claims do not recite "consisting of". However, based on the language of the claims, i.e., that the particle is represented by $\text{M}(\text{TiO}_3)$ where M is Ca, Sr, Ba, Pb, or Mg, Applicants submit that SO_3 is excluded. That is, M can not be represented by SO_3 . In addition, Applicants have added claims 22-24 reciting "consisting of", and Applicants submit that SO_3 is clearly excluded from those claims.

Therefore, the particles of the present invention are different from those of JP '729 and JP '635.

With respect to JP '617, a ratio of D_2/D_1 more than 10 is disclosed based on the disclosure of a particle size of 0.5 - 2.5 μm (probably secondary particle size) and a specific surface area is 70 m^2/g or more. The minimum value of the ratio of D_2/D_1 of JP '617 is obtained, when the particle size is 0.5 μm and the specific surface area is 70 m^2/g . In the case of M in formula (I) of present invention, Mg has the smallest ρ ($=3.36$) compared to Ca, Sr, Ba, and Pb. Accordingly, the calculation of minimum ratio of D_2/D_1 for JP '617 is as follows:

$$D_1 = 6/\rho S = 6/(3.36 \cdot 70) = 0.0255$$

$$D_2 = 0.5$$

$$D_2/D_1 = 0.5/0.0255 = 19.6 > 10$$

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/579,708

Therefore, JP '617 fails to teach or suggest the perovskite titanium-containing composite oxide particles of the present invention.

JP '414 discloses a perovskite type compound powder obtained from a water based suspension comprising a hydrated oxide of Mg, Ca, Sr, Ba or Pb and a hydrated oxide of Ti. The specific surface area of a hydrated oxide is at least 50 m²/g. The hydrated oxide is one of the raw materials of a perovskite type compound. JP '414 discloses perovskite type compound powders having a specific surface area of 11.0 and 8.9 m²/g and a secondary particle size of 0.15 and 0.5 μm, respectively. Accordingly, these values are outside the range of the specific surface area of 28-200 m²/g for the present invention. Therefore, JP '414 does not teach or suggest the present invention according to claim 1.

JP '745 discloses ceramic powder obtained from a mixture slurry comprising a hydroxide of Mg, Ca, Sr, Ba or Pb, a hydroxide of Ti, and water. The specific surface area of a hydroxide component is at least 100 m²/g. The hydroxide component is one of the raw materials of a perovskite type compound. JP '745 discloses perovskite type compound powders having a primary particle size of 0.1 to 0.5 μm measured using a scanning electron microscope.

Based on the English abstracts, JP '745 does not disclose secondary particles. Therefore, JP '745 does not disclose a ratio of D_2/D_1 . Accordingly, JP '745 does not teach or suggest the present invention according to claim 1.

In addition, JP '617, JP '414 and JP '745 do not disclose the use of a titanium oxide particle comprising brookite crystalline form or subjecting a titanium salt to hydrolysis

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/579,708

in an acid solution. Therefore, the particles of the present invention would be different from those of the JP '617, JP '414 and JP '745. Accordingly, since the process used in the present invention and the cited art are different, the particles of JP '617, JP '414 and JP '745 are different from the particles of the present invention according to claims 6 and 17.

In view of the foregoing, Applicants respectfully submit that the present invention is not taught or suggested by the cited references. Therefore, withdrawal of the above rejections is respectfully requested.

IV. Response to rejection of claims 6 and 17 under 35 U.S.C. § 103(a)

On pages 4 and 5 of the Office Action, the Examiner rejects claims 6 and 17 under 35 U. S. C. 103 (a) as being unpatentable over Watanabe et al. (U.S. Patent 5,204,031) or JP 7-291607 (JP '607).

Applicants respond as follows.

With respect to JP '607, as argued in the response filed on December 21, 2001, JP '607 discloses a D_2/D_1 ratio of 25-100, which is not within the range of 1 to 10 of the present invention. Therefore, JP '607 fails to teach or suggest the particle of the present invention according to claim 1.

With respect to Watanabe, as argued in the response filed on December 21, 2001, Watanabe does not disclose secondary particles, and therefore does not disclose a D_2/D_1 ratio. Therefore, Watanabe fails to teach or suggest the particle of the present invention according to claim 1.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/579,708

In addition, JP '607 discloses forming a titanium-containing composite oxide particle by mixing titanium oxide sol and an alkaline earth metal element hydroxide. However, JP '607 does not disclose reacting a titanium oxide particle containing brookite crystalline with a metal salt or subjecting titanium salt to hydrolysis as in the present invention.

Watanabe does not disclose the use of a titanium oxide particle comprising brookite crystalline form or subjecting titanium salt to hydrolysis to obtain perovskite oxide particles.

Therefore, the processes of claims 6 and 17 yield a product that is different from the product obtained when the processes of JP '607 and Watanabe are used, and therefore, the process limitations define the present invention and result in a particle which is novel and not obvious. Accordingly, JP '607 and Watanabe fail to teach the particle of the present invention.

In view of the foregoing, Applicants respectfully request that the rejections be withdrawn.

V. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/579,708

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

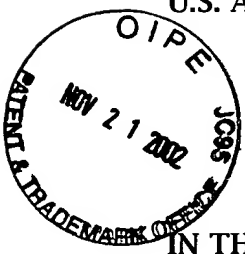


Keiko K. Takagi
Registration No. 47,121

SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

Date: November 21, 2002

RECEIVED
NOV 25 2002
TC 1700



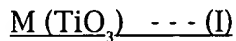
APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

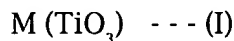
The claims have been amended as follows.

6. (Three Times Amended) A perovskite titanium-containing composite oxide particle represented by general formula (I),



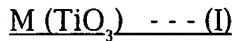
wherein M is at least one of Ca, Sr, Ba, Pb, or Mg, and

wherein the specific surface area is 28 to about 200 m²/g, obtained by removing a dispersion medium from a sol in which the perovskite titanium-containing composite oxide particle is dispersed, wherein said sol is obtained by a process comprising the step of [allowing] reacting a titanium oxide particle comprising brookite crystalline form [to react] with a metal salt comprising at least one of Ca, Sr, Ba, Pb, or Mg in a liquid phase[:



wherein M is at least one of Ca, Sr, Ba, Pb, or Mg].

17. (Twice Amended) A perovskite titanium-containing composite oxide particle represented by general formula (I),

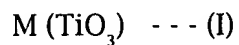


wherein M is at least one of Ca, Sr, Ba, Pb, or Mg, and

wherein the specific surface area is 28 to about 200 m²/g, obtained by removing a dispersion medium from a sol in which the perovskite titanium-containing composite oxide particle is dispersed, wherein said sol is obtained by a process

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/579,708

comprising the step of [allowing] reacting a titanium oxide sol prepared by subjecting a titanium salt to hydrolysis in an acid solution [to react] with a metal salt comprising at least one of Ca, Sr, Ba, Pb, or Mg in a liquid phase[:



wherein M is at least one of Ca, Sr, Ba, Pb, or Mg].

Claims 20 to 24 have been added as new claims.